

PATENT
Docket No. 10024-2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:)
Stephen H. Brown et al.)
Serial No. To Be Assigned)
Parent Application:)
Serial No. 09/017,777) Examiner: H. Myers
Filed: Herewith) Group Art Unit: 1764
For: DECREASING BI-REACTIVE)
CONTAMINANTS IN AROMATIC)
STREAMS)

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Please preliminarily amend the present application as follows:

IN THE SPECIFICATION:

Page 1, delete the TITLE “DECREASING BI-REACTIVE CONTAMINANTS IN AROMATIC STREAMS” and insert therefor –DECREASING BR-REACTIVE CONTAMINANTS IN AROMATIC STREAMS--.

Page 2, line 9, delete “BI” and insert therefor –Br--.

IN THE CLAIMS:

Please cancel claims 1-20, inclusive, without prejudice.

Please enter the following new claims:

21. A method for removing bromine-reactive contaminants from an aromatic hydrocarbon stream which comprises:

providing an aromatic hydrocarbon feedstream which has a negligible diene level;
contacting the feedstream with an unbound or self-bound acid active catalyst composition under conditions sufficient to remove mono-olefinic bromine-reactive contaminants.

22. The method of claim 1 wherein the diene level is below 50 ppm.

23. The method of claim 1, wherein the aromatic hydrocarbon stream comprises C7+ reformate or light reformate.

24. The method of claim 23 wherein the reformate comprises benzene, toluene and xylene.

25. The method of claim 21 wherein the acid active catalyst composition comprises a crystalline molecular sieve material with a pore/channel system having ten or more membered oxygen ring openings.

26. The method of claim 25 wherein the crystalline molecular sieve material is selected from the group consisting of materials having 10 membered oxygen ring openings, 12 membered oxygen ring openings, both 10 and 12 membered oxygen ring openings, and combinations of these materials.

27. The method of claim 25 wherein the crystalline molecular sieve material comprises a layered material.

28. The method of claim 27 wherein the crystalline molecular sieve material is selected from the group consisting of MCM-22, MCM-36, MCM-49 and MCM-56.

29. The method of claim 21 wherein the conditions comprise a temperature from about 200°F to about 500°F, a space velocity from about 0.1 WHSV to about 100 WHSV, and a pressure from about 50 to about 1000 psig.

30. The method of claim 21 wherein the aromatic hydrocarbon feedstream has a negligible diene level as it emerges from a previous petroleum processing procedure.

31. The method of claim 21 wherein the aromatic hydrocarbon feedstream has a diene level which has been decreased by pre-treatment of the feedstream to decrease dienes to a negligible level.

32. The method of claim 31 wherein the pre-treatment comprises contacting an aromatic hydrocarbon stream containing dienes with a diene-removing catalyst composition at conditions sufficient to remove dienes to a negligible level but not mono-olefins.

33. The method of claim 32 wherein the diene-removing catalyst comprises clay or base metal-containing hydrotreating or hydrogenation catalyst.

34. The method of claim 33 wherein the diene-removing catalyst comprises an element selected from the group consisting of NiMo/Al₂O₃, CoMo/Al₂O₃, Ni/Al₂O₃ and Ni/SiO₂.

35. The method of claim 34 wherein the conditions sufficient to substantially remove dienes but not mono-olefins comprise a temperature from about 50°F to about 500°F, a space velocity from about 0.1 WHSV to about 10 WHSV, a pressure from about 50 to about 500 psig, and in the absence of added hydrogen.

36. The method of claim 1 wherein said catalyst is unbound.
37. The method of claim 1 wherein said catalyst is self-bound.
38. The method of claim 1 wherein said catalyst comprises self-bound MCM-22.
39. A method for removing bromine-reactive contaminants which comprise dienes and mono-olefins from an aromatic hydrocarbon stream, said method comprising:
contacting the aromatic stream with a catalyst composition comprising clay or hydrotreating catalyst, said contacting being under first conditions comprising a temperature of about 100°F to about 500°F, a space velocity from about 0.1 WHSV to about 10 WHSV, and a pressure from about 50 to about 500 psig, to selectively and substantially remove dienes providing an essentially diene-free aromatic feedstream;
contacting the essentially diene-free aromatic feedstream with an unbound or self-bound acid active catalyst which comprises a crystalline molecular sieve material, said contacting being under second conditions comprising a temperature from about 200°F to about 500°F, a space velocity from about 0.1 WHSV to about 100 WHSV, and a pressure from about 50 to about 1000 psig, to selectively remove mono-olefins from the aromatic feedstream.
40. The method of claim 39 wherein said acid active catalyst comprises self-bound MCM-22.

REMARKS

Applicants respectfully request entry of this Preliminary Amendment, and consideration of this application, as amended.

All of the claims (Claims 1-20) as originally filed have been cancelled. New claims 21-40 have been added and relate to the originally filed specification and claims as follows.

The present application has been filed in order to specifically claim a method for removing bromine-reactive contaminants from an aromatic hydrocarbon stream which uses an *unbound or self-bound* acid active catalyst composition to remove mono-olefin bromine-reactive contaminants from aromatic hydrocarbon feedstreams of negligible diene level.

Support for the “unbound” limitation of claims 21 and 39 can be found in claim 9 as originally filed whilst the “self-bound” limitation finds support in the specification at page 13, line 26.

The relationship between the original claims and claims 21-40 can be described in further detail. Claim 21 corresponds to original claim 1 but incorporates the “unbound” “self-bound” limitations above-described . Claims 22-28 correspond to original claims 2-8, respectively. Claims 29-35 correspond to original claims 11-17, respectively. Claim 36 relates specifically to unbound catalyst, claim 37 relates specifically to self-bound catalyst and claim 38 relates specifically to MCM-22 self-bound catalyst, support for which is found at page 13, line 26 of the original specification.

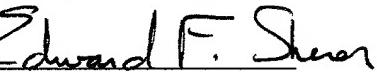
Claim 39 corresponds to original claim 18 with the “unbound or self-bound” limitation taken from original claim 9 and page 13, line 26 of the specification. Claim 40 relates specifically to MCM-22 self-bound catalyst, support for which is found at page 13, line 26 of the original specification.

Claims 21-40 are presently in the application.

Conclusion

Applicants respectfully submit that the present claims describe a new, useful and unobvious method for decreasing bromine-reactive contaminants in aromatic streams with an unbound acid active catalyst. Accordingly, it is respectfully requested that the Examiner enter and allow the presently amended claims.

Respectfully submitted,

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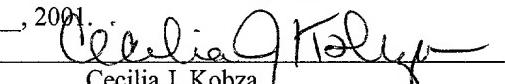
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